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10/551,112	09/28/2005	Susumu Yasuda	03500.017988.	4322

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EXAMINER

BENSON, WALTER

ART UNIT PAPER NUMBER

2858

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

2. Claims 17-32 are pending

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 17-19, 23, 24, 25, 27, 29, 30, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Richl, P.S. "Microsystems for Electronic Sensing", Dissertation, Nov. 2002, as listed in IDS 11/06/2006).

As to claims 17, 27, and 30, Richl discloses a potential sensor comprising:

first and second detection electrodes [Fig. 5.1 and corresponding cross-section of Fig. 5.3, electrodes V_{i+} and V_{i-}] opposed to a potential-measured object a potential of which is to be measured (Fig. 5. 1, potential indicated by E);

a movable shutter positioned between the detection electrodes and the potential-measured object with gaps thereto (Fig. 5.1, “shutter” and Fig. 5.3, light grey structure);

where the movable shutter is configured to assume a first state and a second state [Fig. 5.1, array at shutter and Fig. 5.3: shutter moves in x-direction], the first detection electrode being entirely exposed and the second detection electrode being entirely masked when the movable shutter assumes the first state, and the first detection electrode being entirely masked and the second detection electrode being entirely exposed when the movable shutter assumes the second state (Fig. 5.1, and Fig. 5.3, moving of shutter in x-direction; and p.81, last 2 lines).

5. As to claim 18, Richl discloses where the movable shutter is elastically supported to be movable between the first state and the second state (p.35, Fig. 3.4).

6. As to claim 19, Richl discloses where a drive frequency of said potential sensor is substantially equal to a mechanical resonance frequency of said movable shutter (p. 80, par. 5.2.1 “microresonators” used as shutters).

7. As to claim 23, Richl discloses where the movable shutter is elastically supported to be movable between the first state and the second state (p. 79, Fig. 5.1).

8. As to claim 24, Richl discloses where the shutter is comprised of an actuator (p. 35, Fig. 3.4).

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9. As to claim 25, Richl discloses a potential sensor comprising:

plural detection electrodes disposed adjacent each other (Fig. 5.1 and corresponding cross-section of Fig. 5.3, electrodes V_{i+} and V_{i-});

plural movable shutters each of which is individually actuated to mask or expose the plural detection electrodes selectively (p. 81, lines 1-2),

at least one of the plural movable shutters being activated so as to expose a first detection electrode of the plural detection electrodes and mask a second detection electrode of the plural detection electrodes, which is adjacent to the first detection electrode, at a first state, and so as to expose the second detection electrode and mask the first detection electrode at a second state (Fig. 5.1, and Fig. 5.3, moving of shutter in x-direction; and p.81, last 2 lines).

10. As to claim 29, Richl discloses where the plurality of sensor units are arranged in an array (p. 81, lines 1-2).

11. As to claim 32, Richl discloses a potential measuring method comprising:

a step of positioning a potential sensor that includes first and second electrodes [Fig. 5.1 and corresponding cross-section of Fig. 5.3, electrodes V_{i+} and V_{i-}] and a movable shutter for selectively masking the first and second electrodes [Fig. 5.1, "shutter" and Fig. 5.3, light grey structure], in which the movable shutter is configured to assume a first state and a second state [Fig. 5.1, array at shutter and Fig. 5.3: shutter moves in x-direction], the first electrode is exposed and the second electrode is masked

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when the movable shutter assumes the first state and the second electrode is exposed and the first electrode is masked when the movable shutter assumes the second state [Fig. 5.1, and Fig. 5.3, moving of shutter in x-direction; and p.81, last 2 lines], and a potential-measured object in such a manner that the movable shutter is positioned between the first and second electrodes and the potential-measured object (Fig. 5. 1, potential indicated by E);

and a step of switching the movable shutter between the first state and the second state [p. 80, par. 5.2.1, lines 1-4], and measuring a potential of the potential-measured object based on a change in an electrostatic capacitance generated between the first and second electrodes and the potential-measured object (abstract, p1, first paragraph).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richl in view of Kubby et al. (US Patent No. 6,177,800 and Kubby hereinafter).

Although the system disclosed by Richl shows substantial features of the claimed invention (discussed in the paragraphs above), it fails to disclose:

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further comprising one or more addition movable shutters and at least one additional current application means, which supplies said movable shutters with currents substantially perpendicular to the moving directions of said movable shutters, whereby the first state and the second state are assumed by an interaction of the currents supplied to said movable shutters [claim 22];

Image-forming means configured to control an image formation based on an output of the potential sensor [claim 31].

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Richl, as evidenced by Kubby.

Kubby discloses a windowed shutter on a MEMS system to improve output current of a non-contacting electrostatic voltmeter having:

further comprising one or more addition movable shutters and at least one additional current application means, which supplies said movable shutters with currents substantially perpendicular to the moving directions of said movable shutters, whereby the first state and the second state are assumed by an interaction of the currents supplied to said movable shutters [claim 22] (col. 3, lines 46-51);

Image-forming means configured to control an image formation based on an output of the potential sensor [claim 31] (Fig. 2; col. 4, lines 53-66)

Given the teaching of Kubby, a person having ordinary skill in the art at the time of the invention would have readily recognized the desirability and advantages of modifying Richl by employing the well known or conventional features of xerography, such as disclosed by Kubby in order to efficiently provide for a xerographic device and operation with the Richl apparatus.

Allowable Subject Matter

14. Claims 20, 21, 26, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fails to teaching in combination as claimed a potential measure system where the movable shutter is configured to be controlled by magnetic-field generation means, which generates a magnetic field substantially perpendicular to a movable direction of the movable shutter, and current application means, which supplies the movable shutter with a current substantially perpendicular to the movable direction of the movable shutter and to a direction of the magnetic field, thereby causing the movable shutter to assume the first state and said second state.


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter Benson whose telephone number is (571) 272-2227. The examiner can normally be reached on Mon to Fri 6:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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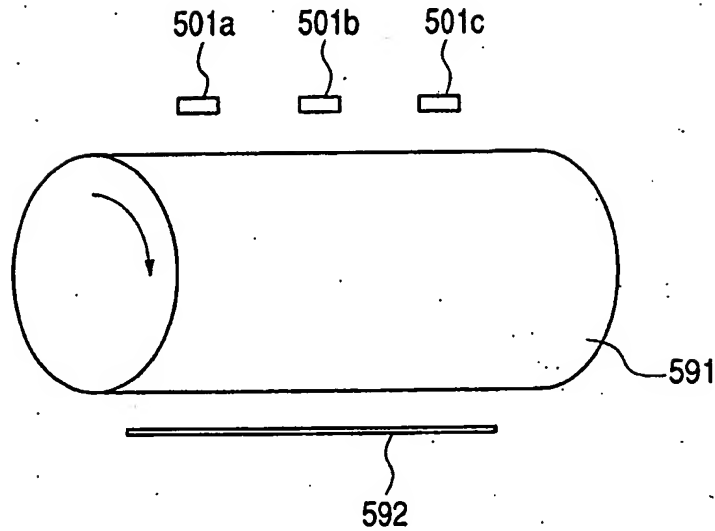
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Walter Benson
Primary Examiner

April 17, 2007

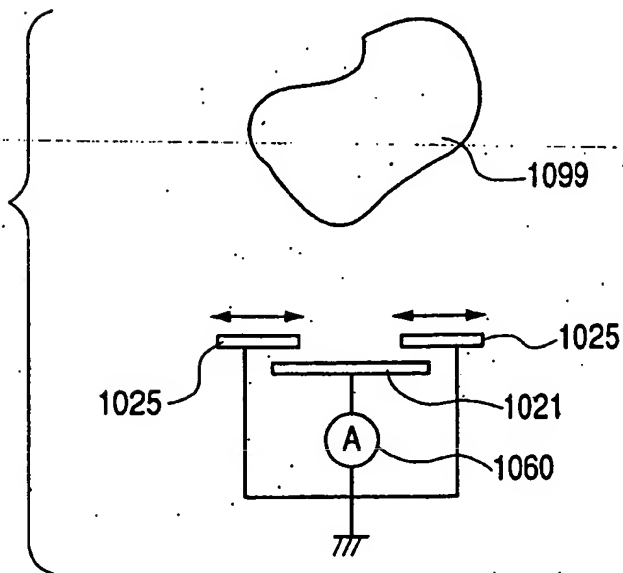
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FIG. 8



(PRIOR ART)

FIG. 9



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